

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

ERT 3056 – INTRODUCTION TO CIM
(RE)

5 MARCH 2018
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTION TO STUDENTS

1. This Question paper consists of 4 pages including cover page with 4 Questions only.
2. Attempt all **FOUR** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

Question 1

- a) Give comparison between Boundary Representation (B-rep) and Constructive Solid Geometry (CSG) in terms of implementation.

[10 marks]

- b) Compared to the CSG representation, which uses only primitive objects and Boolean operations to combine them, B-rep is more flexible and has a much richer operation set. Give another **FIVE** reasons, why B-rep is commonly used in CAD software?

[5 marks]

- c) A surface model represents the skin of an object, while solid modeling is a complete geometric data representation of an object is one that enables points in space to be classified relative to the object. Distinguish the **FIVE** advantages each of implementing solid modeling and surface modeling.

[10 marks]

Question 2

- a) What are the **THREE** types of raw materials used in rapid prototyping fabrication?

[3 marks]

- b) Besides the raw material, what other process feature distinguishes the rapid prototyping technologies?

[4 marks]

- c) Distinguish how Fused Deposition Model (FDM) and Stereo Lithography (SLA) technologies work.

[18 marks]

Continued...

Question 3

- a) By means of a neat sketch, differentiate the **THREE** types of work-holding methods that are used in CNC machining centres.

(Note: Please write the working principals based on your sketch provided)

[12 marks]

- b) By analyzing Figure Q3(b), state the preferred 'Positioning System' in the real time CNC industry by selecting path 'M' or 'N'. Provide **TWO** reasons to support your answer.

[4 marks]

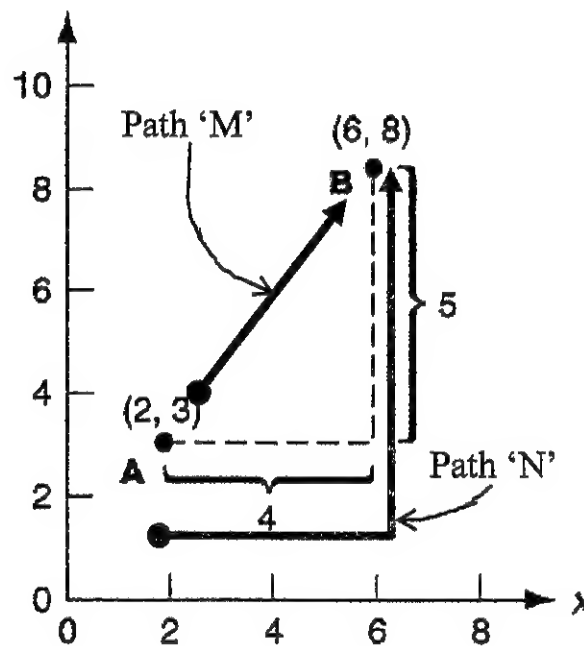


Figure Q3(b)

Continued...

c) Find the correct CNC coding's for the following operations:

- i) Linear Interpolation/Slow traverse
- ii) Circular Interpolation: Clockwise
- iii) Circular Interpolation: Counter clockwise
- iv) Program stop
- v) Spindle stop
- vi) Tool change
- vii) Coolant on
- viii) Program stop, reset to start
- ix) Subprogram call

[9 marks]

Question 4

- a) Robots are heavily used in the manufacturing sectors for material handling.
State the main components of a robot and explain your answer.

[12 marks]

- b) Identify **SIX** advantages of Automatic Guided Vehicles (AGV).

[6 marks]

- c) Identify **SEVEN** benefits in Computer Integrated Manufacturing (CIM) and explain them briefly.

[7 marks]

End of Paper